

# THE BUILDING OF THE PORTSDOWN HILL FORTS

With special reference to Forts Nelson, Widley and Southwick

Geoff Salter

The Royal Defence Commission Report regarding the defence of Great Britain was given Royal Assent in August 1860, this began a new era of reinforcing and building new fortifications throughout the country. Many more were planned than actually built, some were not built because of a need to keep costs down and others abandoned because of problems with foundations.

The Commission was very concerned about possible enemy attack in the very near future and they suggested that at Portsdown Hill the contracts were split in two.

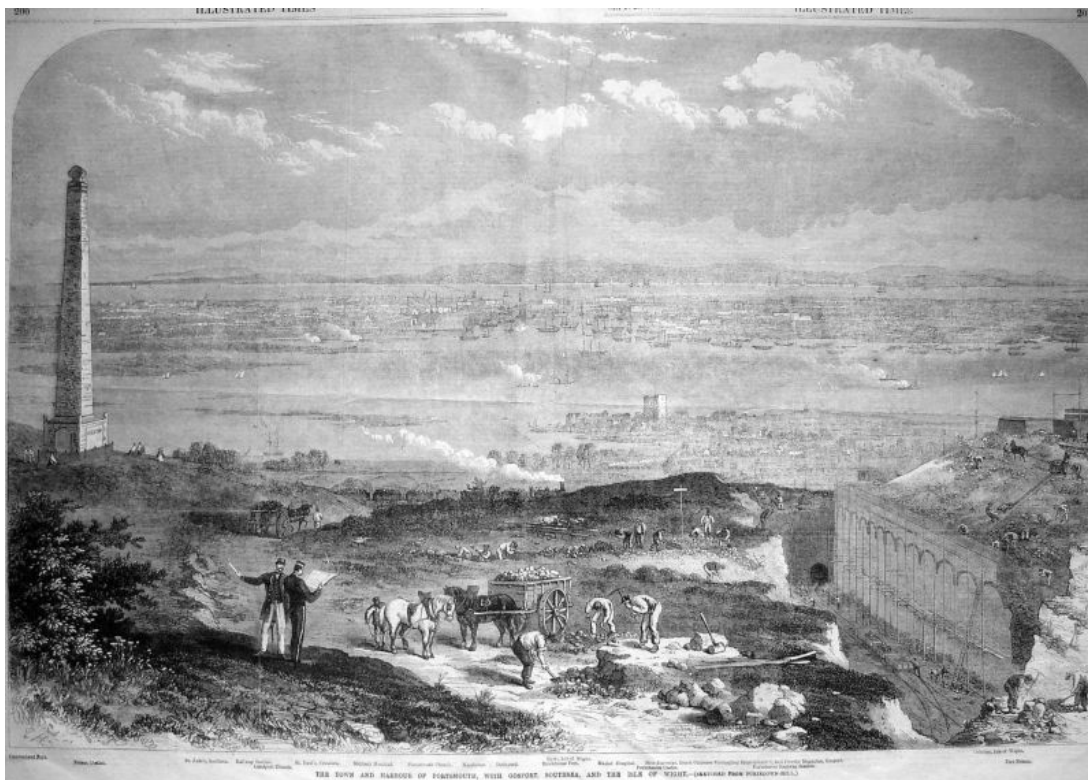
The first stage to be completed in 2 or 3 months; that was to dig the ditches and throw up the ramparts. Then, at least if the forts were attacked, guns could be put up on the ramparts to defend Portsmouth. The second stage was to build the rest of the forts

including the barracks etc..

In the Portsmouth area, work began with the purchase of land across Portsdown hill to the bottom of its northern boundary, to give the forts "Free-fire zone!"

The largest landowner on Portsdown was the Thistlethwayte Estate of Southwick. Together with 20 other freeholders, including the Deverell family of Purbrook Park, they owned most of the hill. Just over 2,167 acres were purchased for £300,000, this included land for Fort Fareham. [This worked out at about £150 per acre!]

In August 1860, the leader article in the PORTSMOUTH TIMES expressed local concern under the headline "OUR VERY LUNGS!". They said, "...until proved, the forts should not be built on the hill as it was the only spot where pure air could be breathed by schools



"The Town and Harbour of Portsmouth from Portsdown Hill" - Illustrated Times of 26 September 1863 (Royal Armouries Collection)



Widley Mill 1860  
and the visit of  
the Defence  
Committee -  
from Fort Widley  
and The Great  
Forts of  
Portsmouth by A.  
Corney

*of all denomination, rustication parties\*  
cricket players and athletic  
amusements!"*

\*(Advert in Hants., Telegraph 1813) -  
RUSTIC SPORTS Included:-

A guinea to be played for at Single  
Stick. (A National game of antiquity; a  
type of mock sword fighting with  
sticks)

Half a guinea to be Wrestled for.

A Holland Smock to be run for by Fair  
Maidens,

And many other diversions.

Major General J. Foster R.E., reported to  
London in August 1860 that to survey  
and mark out the sites requested,  
damage would be caused to the crops  
in those areas. The Inspector General of  
Fortifications replied *"Carry on with it,  
they can claim compensation for any  
damage!"*

As a result the land was cleared very  
quickly around Nelson's Monument,  
Fir Clumps, Widley Mill, and  
Crookhorn, and as expected the men  
surveying and marking out the new  
forts caused damage to crops of  
wheat, barley and oats. At the  
proposed fort at Nelson's monument,  
damage was done as the site of the  
fort was in the middle of a standing  
field of corn. Later it was noted that Mr

Deverell was paid £3 16s 6d  
compensation for the damage to his  
crops! (Possibly for damage caused  
marking out the proposed Fort  
Purbrook.)

In September 1860 the Defence  
Committee led by the Duke of  
Cambridge, Commander-in-Chief of  
the Army inspected Widley Mill, the  
site of the future Fort Widley. An  
engraving at the time shows the visit,  
the fort was marked out with long  
poles to give the committee some idea  
of the scale of the future work. A post-  
windmill was first recorded on this site  
in 1675. Thomas Thistlethwayte  
purchased this mill, the mill house and  
the adjoining property, for £1,200 in  
1825. The War Office acquired the site  
from him in 1860.

Thomas Thistlethwayte was the largest  
landowner of Portsmouth Hill and he  
took issue on the compensation for his  
land; he wanted £106,000 and the War  
Office offered him £62,000. It was not  
until much later it went to a special  
jury that the final figure was given to  
him of £95,200 for absolute purchase of  
902 acres and clearance rights over  
another 963 acres of his land.

The boundary of lands purchased by  
the government were indicated by  
W/D boundary stones and some stones  
still exist today buried in hedges and  
banks, marked with the military broad  
arrow.

The Commanding Royal Engineer,  
Portsmouth division, Colonel J.W.  
Gordon, had offices in Lion Terrace  
Portsea, was charged with the  
construction of the forts. He also dealt  
with the details of land purchase,  
through a Southsea land agent T.C.  
Owen. Lt. William Crossman R. E.  
designed the Portsmouth forts and the  
Hilsea lines.

A plea from the local R.E. office was  
forwarded to London, at that time they  
had 6 clerks and one sapper who were  
kept very busy. A copy machine was  
requested which would have released

at least one person, and as the building work increased, the workload could be absorbed without any further help. This request was denied! Noted here were the following details; the office dealt with 355 letters a month both writing and copying, also all expense ledgers; they did not deal with estimates or contractors accounts.

The construction of the forts was to be overseen by the Lt. Col. J.W. Gordon R.E., C.R.E., (Portsmouth Division). A Royal Engineer Officer was appointed to each fort and one Royal Engineer Officer, Lt. Col. Ross R.E., (Portsmouth), to oversee the group.

Each fort had a contractor's agent on the spot who liaised with its local R. E. officer on the bulk of the day-to-day problems. Only the major conflicts and problems would be passed up the chain of command to the Commanding Royal Engineer.

During February 1861, discussions took place over the future of the "The George" public house. Col. Gordon R.E., agreed that the best solution for all concerned was not to purchase the pub but to let the tenant stay on rent free rather than to sell it to the Government and rent it back to him.

Col. Gordon took possession of Mr Richardson's house, Portsdown Cottage, as a quarter for Lt. Col. Ross. Col. Gordon also proposed to take possession of the lands the works to be erected on and also some local houses above "The George" for the Royal Engineer's Department.

Col. Gordon asked for Clerk of Works, Mr Bennett (2nd Class), who has been appointed "Chief Clerk of Works Portsdown" to return to Portsmouth to be with Lt. Col. Ross. Also requested was a draughtsman, clerk and messenger for Lt. Col. Ross. The same month an estimate was lodged for £76-5s-2¼d for alterations and repairs to buildings near "The George" for forming a quarter for the Clerk of Works.

In March 1861 the "Tea Gardens" in the chalk pit, run by Miss Carpenter and Miss Carey were given 14 days notice to quit. Miss Carpenter had lived there for 40 years and Miss Carey for 20 years.

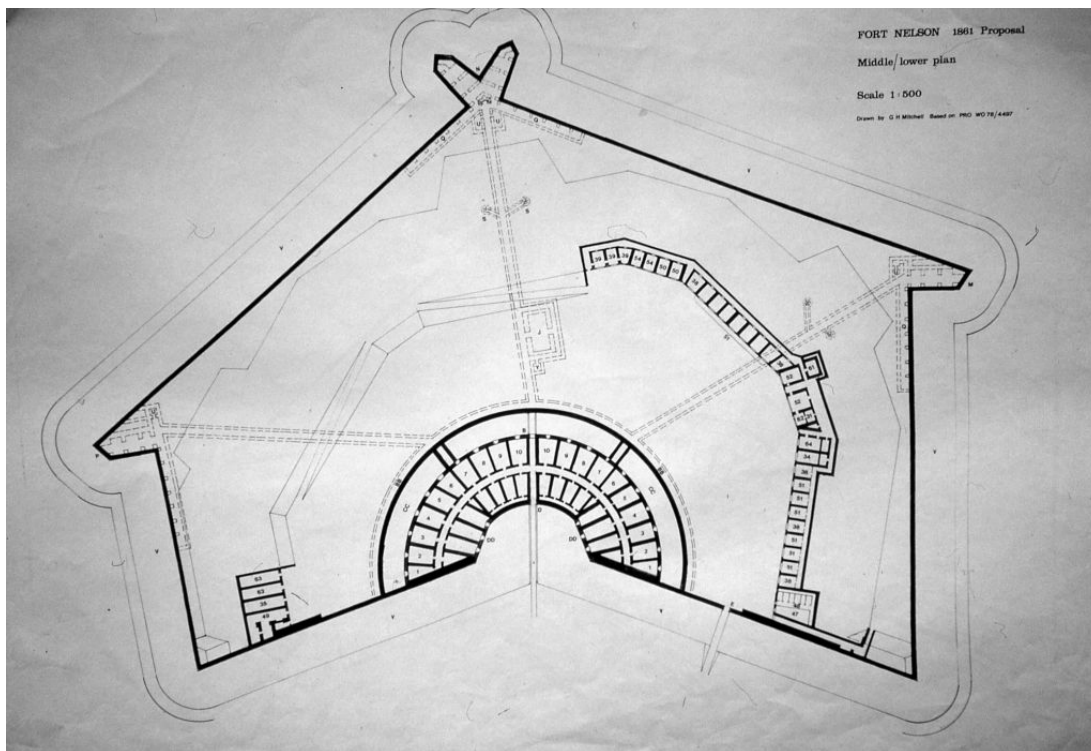
In April 1861 it was noted in the local paper that Lt. Col. A. Ross R.E., was about to take up his Quarters in a large house, Portsdown Cottage, opposite the Turnpike Gate near Admiral Austen's residence. This was just over the brow of the hill at Widley. (Lt. Col. Ross had been appointed Commanding Royal Engineer-Portsdown, reporting to Col. Gordon Commanding Royal Engineer-Portsmouth Division.)

1861 CENSUS lists at Portsdown Cottage: -Lieut. Col. Archibald Ross, Royal Engineers (46 yrs old). His wife Alethia (37yrs old) and family - i.e., Daughter Alethia 3yrs old (born in Malta) and two sons, Archibald 2yrs old, and Charles six months old (born in Gillingham, Kent). Staff: - groom and general servant, nurse, cook, house and parlour maid, and Sarah Eastmead a Nursery Maid (born in Gillingham).

In details from a later sale of the house, we learn: -That parts of the house dated from the 17th century but it was substantially rebuilt in 1831. When the next year it was offered for sale, had seven bedrooms, dressing rooms a closet, drawing, dining and breakfast rooms. Also a large productive garden, with stables and coach house etc.. It was called a Cottage "Orneel" situated on a delightful lawn with greenhouse and shrubs of luxuriant growth. With a one hundred yard long sweeping drive up from the Portsmouth to London Road to the entrance gate situated near the Turnpike. The house was demolished in 1962 now the site of Christchurch Gardens.

Work progressed with the clearance of trees, bushes and some buildings. The War Office commandeered many other buildings for military use.

Original plan of Fort Nelson 1860 showing the proposed keep and casemates beneath the east ramparts. (Drawn from the original by G Mitchell)



Sappers and Miners occupied some other small houses on the hill.

On July 27th 1861 the last Annual Fair was held on the Hill as it had been given notice to close by the War Dept.. Three month's later Lt. Col. Ross requested huts for officers and civilians at Fort Purbrook to give them shelter in the winter. He had heard that some Crimea huts were in store. The Inspector General of Fortification wrote back and said they were not available but did agree that some should be built and later used as married soldiers quarters.

The War Department, through the Commanding Royal Engineer (Portsmouth division), awarded the contracts in late 1861.

- William Tredwell was successful and was awarded the contracts for the construction of Forts Nelson, Widley and Southwick. William Tredwell, contractor for Public Works, had his main office in London, newspaper reports show he had a local office at 56, West Street Fareham from 1861 to 1867. His local manager was John

Ivery, who also gave this address as his private address.

- Edward Baker was given the contract to build Fort Purbrook and its outworks.
- Lee and Sons the contract for Fort Wallington.

Two contracts for the construction of forts were issued, the first to the contractor was a lump sum and the second, was to be paid on a Schedule of Prices

At Fort Nelson, William Tredwell received £54,236, for the first contract to excavate the earth works, forming the parapet etc., starting in May 1861. The second phase of the work at Fort Nelson, started in February 1862 and by 1868 it had added £24,413 to the costs. (The final estimated cost at that date was £84,126).

Political interference and modifications to the original plans caused delays as work progressed. Letters show that in May 1862, Mr Tredwell's manager, John Ivery, listed various works, which could not proceed through lack of information and up-to-date plans.

Examples:-

- (a) Plans for the main Magazines at Forts Nelson, Southwick and Widley.
- (b) Levels of the lower galleries to be decided.
- (c) Details needed of Caponiers, etc..
- (d) What were the sizes shafts needed for the main staircases?
- (e) Fort Nelson and Fort Wallington had been designed to have barracks in the terreplein and a keep of last resort. In 1863 this was revised and they became redoubts or casemated barracks. Forts Southwick, Widley and Purbrook were provided with barracks, which had some of the features of a keep of last resort.

All this led to frequent messages in the R.E. letters from the contractor, William Tredwell, letting the C.R.E. (Commanding Royal Engineers), Portsmouth know why he could not proceed in certain areas, because he had no up-to date plans! The local R.E. Office had been pushing Mr Tredwell, to get on with the work, but the contractor could not do it, because the plans had not been finalized. So it was back to the C.R.E. (Portsmouth Division), to chase London to get the new altered plans urgently completed and passed on to the builders!

August 1861- R.E. Letter books note that works are about to be started at Forts Fareham, Widley and Southwick.

During August it was noted that the main drainage for Fort Wallington was to be connected to Wallington village. At Fort Nelson it was intended to deodorize the soil in a tank near the fort and convey the liquid into the main drain from Fort Wallington.

During August a contract was issued for 10 million bricks to a number of suppliers. e.g. for Fort Nelson the amount was initially for 500,000 clamp bricks and 1 million kiln bricks.

It is interesting to note that in October 1861, Col. Ross showed his great

concern by writing to the Inspector General of Fortifications in London. He had heard a well-substantiated rumour that the GREAT WESTERN RAILWAY were planning to put a tunnel and main railway line through Portsdown Hill from Widley "old" church through under the hill at Widley Mill, to join up with the main line at Cosham.

Col. Gordon added his note saying that "Great Western Railway" plans should be checked out at once, *"...there must be a strong military objection to this plan as this line would compromise the fortifications now being built!"* Nothing was heard of this again but if plans had existed they never saw the light of day!

At the end of November Lt. Col. Ross was made up to full Colonel. It is interesting that in the letters, notes appear checking and querying costs, also reasons requested for increased charges for more work that originally agreed. For example, at this time a query on the bill for £1,400 for horses with harnesses. This showed that checks were being kept and enforced to keep contractors in line.

In November 1861 when working out the water supply needed for the forts it was noted that a War Garrison for each fort Nelson, Southwick, Widley and Purbrook was to be 600 men and 300 men in the outworks in Crookhorn and Farlington. Therefore at ten gallons a day per man = 30,000gallons a day would be needed. An ordinary garrison assumed to be half of the above numbers. The water would be needed to be raised 400ft to Fort Southwick by a 14hp engine. Tanks at the forts would contain 14 days supply also the contractor would need 10,000 gallons a day. Negotiations went on to see if the contractor could do all the work for the main water supply for the forts and also a supply for his building works, while constructing the forts. Mr Tredwell offered to do it at a reduced price!

A search went on for a water supply and wells were sunk with little success. Water was found in the valley north of the hill, but the flow was insufficient. In the end a supply was obtained from Portsmouth Waterworks at Farlington which was pumped into a reservoir at Fort Southwick and then piped to the rest of the forts.

July 1862 bills of quantity regarding water supply were returned with the following observations - The Water charge for the contractor seemed excessive at 1s 6d per 1,000 gallons where government builders in Portsmouth were charging 8d per 1,000 gallons!

Ground was leveled, humps and bumps in the land were used to fill hollows, so future attackers of the forts from the north would find nowhere to hide. The fields were then either rented back to landowners to farm, or where suitable used for brick making by contractors.

By November 1862 offices were complete at Fort Nelson but were very exposed on the south west side to storms. They are reported as being very damp on the inside and they said that men should not be compelled to live in the huts before they are treated with either cementing, tarring or coating with oil. A request was made for an increase in fuel allowance for each Quarter of four rooms, for one week for each room occupied. This was granted and a fire lighted for that

time. Also noted here was that they wanted the local R.E. Officer and Clerk of Works on site "...now that brickwork had started".

The hill became a bustling community and as, The Times and the Hampshire Telegraph recorded it:-

*"...The solitude of the hill has been dispelled by the presence of several hundreds of men employed on construction of the Portsdown Forts. While the shriek of the locomotive is heard over all as it rushes along the crest dragging long trains of carts behind it laden with contractors material".*

### THE WORK FORCE

Navvies were used as well as local labour. Although navvies were paid three and a half times more than other workers, they could shift much more than them. They could shift 20 cubic yards of muck in the same time as the others could only shift 5 cu. yds.

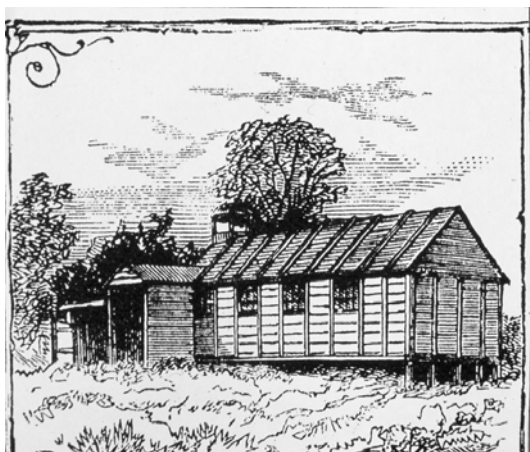
Navvies drank 4 or five quarts of beer and ate 2lbs of beef and 2lbs of bread a day!! Their weekly wage was 19s 6d.

Hundreds of men moved into the area, little shanty-towns grew up near the forts.

The Hampshire Telegraph in 1856, described the shanty town buildings during Fort Rower's construction, as comfortable three roomed houses, rows of neatly constructed clay cottages with thatched roofs.

On Portsdown, the evidence suggests that here, they constructed buildings using wood, from the trees being cleared, with walls of wattle and daub and the roofs were covered with felt. The floor was of brick, covered with some sand for ease of sweeping.

The following information on the life of navvies shows what a difficult life it was at the time. Certainly the work force on the hill would have lived in very similar conditions.



Typical Shanty Hut from "Life and Work among Navvies" by Rev. Barrett 1880

A Landlady or sometimes a whole family would act as landlords to run these huts. A bed cost 4d a night, 1d for sleeping on a table or 1/2d to sleep on the floor! He also had to purchase, steal or catch his food. Most of the men had nicknames e.g., "Happy Jack", "Redhead", and "Yorkie". There were sub-groups e.g., Gingers, Nobbies and Punchies then they were split up e.g., "Ten Ton Punchie" (Large and stocky), "Pig-tail Punchie" (Long Hair) "Fanny Punchie" (Short and thin).

These men lived in huts which usually had two windows either side, with a door in one side and whole building split into three sections.

- 1) Living area in the centre with some wooden benches, tables and stools. In one corner there would be two or three beer barrels and the Landlady held the keys to these barrels! These ladies were reported to be "Old Crones!!", they did all the cooking and cleaning etc., and were abused by the men both physically and mentally.
- 2) At one end of the hut were the bedrooms packed close together some times as bunk beds to get more in! The landlady had a separate area here.
- 3) At the other end was the Kitchen with a big black pot always bubbling over a large fire. The men, sometimes 20+ depending on the size of the hut, would give the "Old Crone" the food they wanted cooked, she would put it in a muslin cloth, tie it up, attach a string to it and put it in the pot. At the other end of the string she would attach a stick on which were notches. It was a code e.g. 4 notches = "Happy Jack's" rabbit, 2 notches = "Redhead's" taters etc..

Local brewers and tradesmen supplied the workforce with lucrative beerhouses and canteens. The C.R.E., tried to ensure they were run "fair-priced", unlike the "Tommy" shops run

by the contractors, here a sovereign (£1-05p) was only worth fifteen shillings (75p)!

On Portsdown Hill the first canteen/beerhouse for the workmen, was set up at Crookhorn in Sept 1861 run by Messrs. Blake of Gosport. The C.R.E. had suggested that only Southwick and Nelson needed ones, as Wallington was close to the village and at Fort Widley they could go to The George!! But by Jan 1862 two had been set up at Southwick and Widley and were also run by Messrs. Blake, brewers of Gosport.

In one R.E. letter it was noted that the military should not be seen to provide canteens/beerhouses, as they should not derive any benefit from the drinking of the contractor's men!

In November 1861 It was suggested that Mr Ross of Bitterne would be ideal person to run a canteen at Fort Nelson, if Mr Tredwell built one. Although it was forwarded with local approval it was not built then. It was not until May 1862, that frequent complaints from the men to William Tredwell, caused him to write to the C.R.E., of the need for a canteen at Fort Nelson. He suggested to Col. Ross that they should be like the ones at the other forts. The C.R.E., convinced London of the need and one was set up to be run by Messrs. R & J Jones brewers of Fareham. The site for the one at Nelson was set up adjacent to the fort and not in front of it as Jervois had suggested, but to the side as the land was more level.

Contractor's material, stores and equipment were stored in their own temporary buildings. The C.R.E. diary states that at Fort Purbrook this consisted of, 20 sheds for stores, stables and offices. The Royal Engineers also needed shelter and offices, so these were erected also! The whole of Portsdown became a building site with shantytowns built by the workforce, dotted around the hill!



**THE RAILWAY**

William Tredwell's family was involved in the construction of various railway lines around the country. So it was with this background that Mr Tredwell decided to ask the War Dept., if he could build a railway to help construct his forts. It was agreed and was constructed in May 1862 running from a junction with the London and South Western railway at the viaduct east of Fareham running up the hill to serve all of the forts he was constructing.

In 1862 agreement was also reached that, at the junction of the Contractors railway and the South Western Railway, the sidings and stations were to be supplied by the South Western Railway and would remain their property. The cost of labour for putting it all in, would be paid for by Mr Tredwell!

Mr Tredwell would also have to pay for transit of bricks and other materials carried over the South West railway to that junction.

On this railway, "Standard Gauge" was used as it had to join up with the main

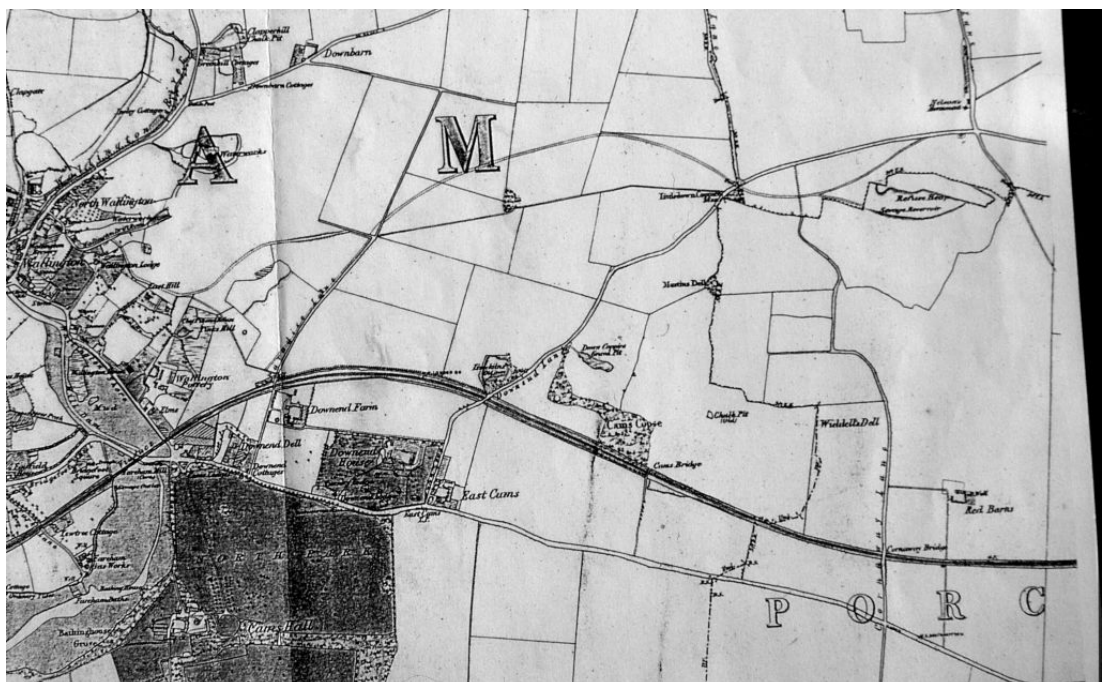
line and the steam engines were almost certainly 0-6-0 using a typical contractors small but very powerful engine at the time.

Ordinance Survey maps of 1873 show the remains of the line of the railway from Fareham at the Delme viaduct to Fort Nelson, Fort Southwick and on to Fort Widley. An R.A.F. aerial photograph of Portsdown Hill taken in 1949 still shows the line of some parts of the track bed. Also some marks can be seen near Fort Nelson in the fields, which could have been the shanty town which one existed on the site.

The line ran from the viaduct east towards Paradise Lane, then it followed the lane north eastwards across the fields crossing the road at Swivelton Lane and the Portsdown Hill Road junction. It then ran south of Fort Nelson, with a siding near the present day public car park, back north across a field joining the road (a track in those days!). It then followed the line of the present day road to Fort Southwick. There were several sidings at this fort as this became a dump for excess chalk etc.. The railway continued along the hill to Fort Widley where it terminated.

Fort Nelson was in the top right field but was not drawn for security reasons.

The line of Tredwell's railway, still visible in this map of 1873. (Section from OS map - six inch of 1873 Copyright Ordnance Survey)







Aerial view of 1949. The scar in the fields at top left is the line of the railway. Hampshire Record Office)

The only parts which can still be identified today are a cutting through a hedge in a field to the west of Fort Nelson, a banked section of the railway to the west of the public car park also at Fort Nelson. To the east of Fort Southwick in front of the old Portsdown Main (ASWE) building, the bed of the railway still exists parallel to the present road on the south side. The line then ran onto Fort Widley and no parts of that are obvious today.

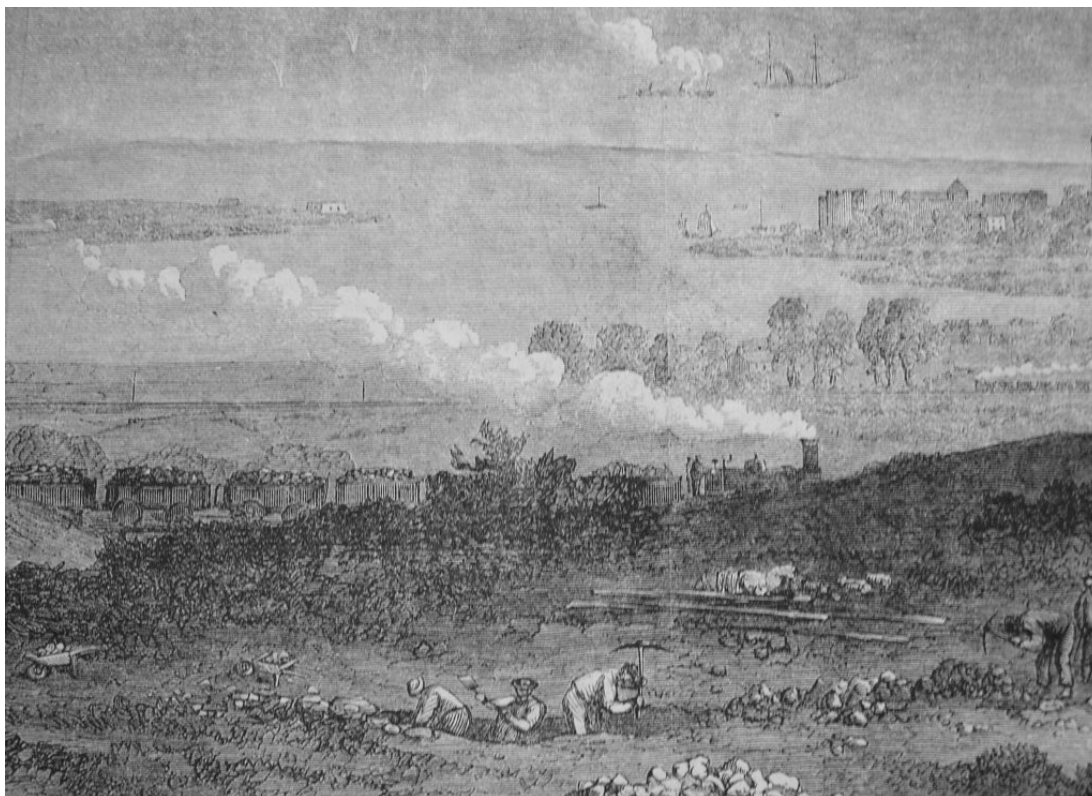
Sept. 1862 - Col. Ross showed some concern of the state of the railway and asked London for the railway line to be inspected. He did not think it was adequately fenced for public safety and he had mentioned it to the contractors agent who "demurred" from putting any up. So in sending in this report Col. Ross was suggesting that an inspector should visit the site!

In November 1862 Mr Tredwell asked Col. Gordon for more financial advances to pay for work on cutting and levelling the hill for the railway as well as for rolling stock. Col. Gordon reported this to the Director of Works and said he felt that Mr Tredwell was trying to get the War Department to set him up in business!

Col. Gordon was generally happy with Mr. Tredwell's work and he suggested to the War Office that the railway could be an advantage later, as a means of communication between the forts for conveying stores and with converted carriages they could carry artillery with the aid of locomotive engines. This line was to carry the thousands of red stock bricks and other construction materials and also to remove some of the unwanted chalk from the ditches that were to be excavated.

In 1866, when the railway was deemed no longer required, Mr Tredwell offered to sell it to the military. Lt. Goble R. E. surveyed the railway and he estimated that the line from the railway from Fort Widley to Fareham, contained 378 tons of wrought iron and 25¼ tons of cast iron, he recommended that the military decline to purchase, as it was worn and in poor condition and it was also too expensive.

Tredwell's steam railway engine loaded with spoil, near Fort Nelson 1863. A section from "The Town and Harbour of Portsmouth from Portsdown Hill"



#### BUILDING WORK PROGRESSES

Of the first 22 tenders put in for making bricks, five were from outside the area, and none of these received contracts.

Bricks were made in various sites in the Fareham and the Fontley area. They all used water from the local rivers but some more unscrupulous brick-makers used sea-water, until they were found out and stopped by the R.E supervising Officer. Sample bricks had been sent away to Chatham for testing and that's how they found out about the seawater being used! Also it was found that one contractor was using foreign Oak NOT English Oak!

The contractors tested the construction of the brickwork; in 1862 two fifty-yard sections of the escarp at Fort Southwick and Widley were built, to test it for winter conditions.

Some 10 million bricks were required for each fort along with Portland stone lintels, granite sills for the embrasures and York stone paving. The only decoration was the Royal Ciphers on the gateways.

William Tredwell had at least one brick-making works to the north of Fareham just below "Uplands" house and gardens. The lady who lived there took him to court for causing a nuisance caused by the brick-burning going on and the pollution affecting her trees, shrubs and producing noxious fumes. He was said to have 28 kilns burning in succession on this site.

The court found in favour of the lady and Mr Tredwell had to keep his kilns at least 400yds from her boundary.

Constructors of other forts made temporary brick works located in fields where they had clay sub-soil as near the forts as possible and brought other material by horse and cart. The government, in some cases, let back the fields to the original owners, therefore the contractors had to pay for clay from those fields to turn into bricks! So many bricks were needed, that contractors for the military purchased thousands of bricks from local brickworks. In 1866 new pug mills (costing £6-10s-6d each), were being used to mix mortar and one

strong boy working a mill could keep 12 to 16 bricklayers busy.

By April 1862 a new road had been completed across the hill to the rear of the works. Great cuttings were made all over the hill and the gleaming white of the chalk would have stood out for miles as great scars on the landscape.

July 1862 - Getting rid of the surplus chalk was a large problem, after filling up several holes and dells. At that date Fort Nelson had 133,000 cubic yards, of unwanted material to be disposed of, Fort Southwick had 179,000 cubic yards and had Fort Widley 20,000 cubic yards.

The answer was at Fort Nelson to raise the Parade by 5 inches, which would lose 24,000 cubic yards and the rest (109,000) dump S/E of Fort Nelson.

At Southwick to dump 50,000 cubic yards in chalk pits and the rest to go to Fort Nelson dump. At Fort Widley 20,000 cubic yards to go into Widley Dell. Later we know that, after much discussion, the largest dump of unwanted material was made to south of Fort Southwick, the material was dumped to the south of the present day road in front of the fort. The D.S.A.(Driving Standards Agency) test centre now stands on the top of this huge spoil heap.

Chalk from the lowest parts of the hill where it sat on limestone, was the hardest, and this was carefully cut into blocks, covered with sacking, thatched and stored for use later in building the ramparts.

At Fort Nelson some of the chalk blocks can still be seen inside the upper west gates at the base of the wall where they were uncovered during the construction of these gates in 1938/9. Conversely chalk dug from highest parts of the hill was quite soft and could not be used in construction of the forts.



Fort Nelson ;  
West upper gate  
showing original  
chalk blocks used  
in the  
construction,  
uncovered when  
the new entrance  
was added during  
WWII

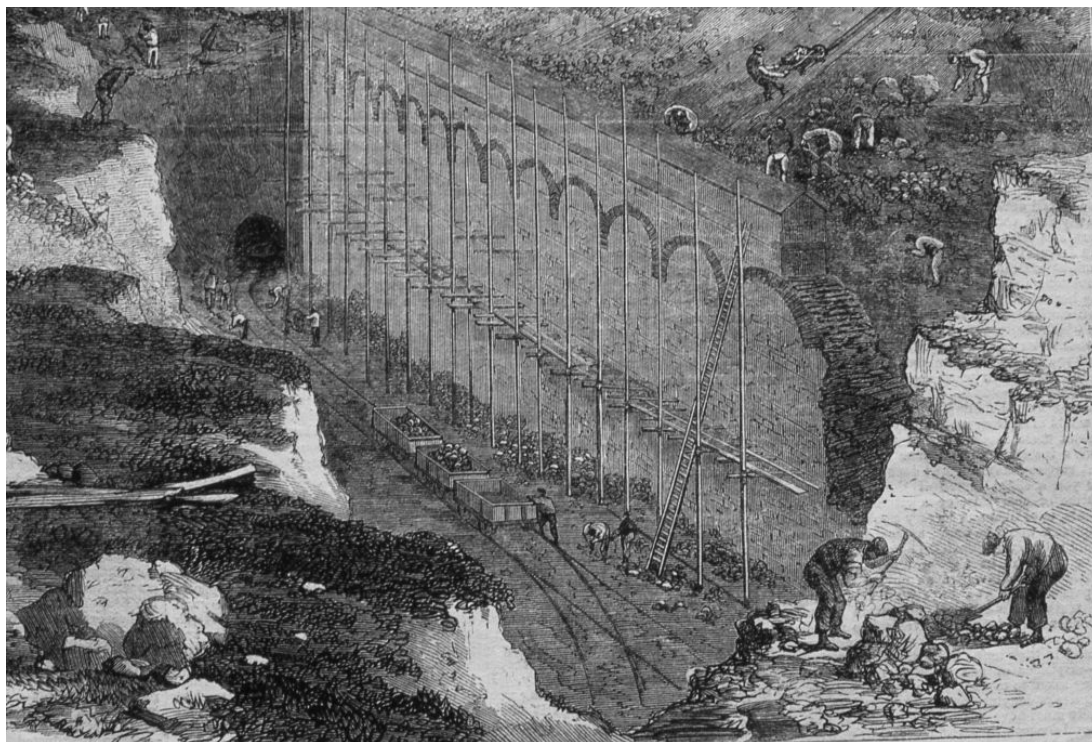
As the ditches were dug at Fort Nelson, an illustration was produced in 1863 showing railway trucks in the base of the east ditch, with a possible tunnel at the end. This tunnel has not been found yet but it is thought it may run south under the present road and appear somewhere down in the public car park. This would make sense as the railway along the hill looped down into this area and had a siding here.

Some parts of the hill, mainly on the east and west ends, blue slipper clay was found and this caused problems with construction. At Fort Wallington, the fort required massive reinforcing

Fort Nelson : Flint  
work in ditch,  
large and small.



The east ditch at Fort Nelson showing the enigmatic tunnel, the scaffolding and the wheelbarrow runs. A section from "The Town and Harbour of Portsmouth from Portsdown Hill" -



with concrete. At Crookhorn Redoubt, they encountered a similar outcrop of clay. Here it was decided to reduce the size of the fort so keeping it all built on chalk.

While digging at Fort Purbrook in March 1862 they found an old shaft 79 feet deep and parts of tunnels dug years before for the possible supply of water for Portsmouth. {Lord of the Manor of Purbrook, Peter Taylor, started the tunnel in the mid eighteenth century hoping to find a water supply for Portsmouth. Starting near Farlington church they tunnelled for one and a half miles, which took

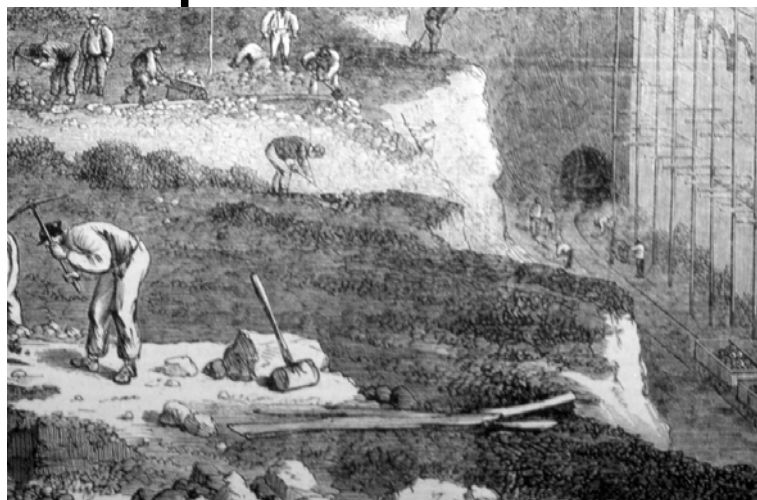
seven years, hoping to tap into springs. They tunnelled though Portsdown Hill and across Crookhorn Copse, but it was unsuccessful because no springs found and the tunnel was never completed.}

Col. Ross suggested that they used the old tunnel as far as possible and together with new ones connect Purbrook, Farlington and Crookhorn for disposal of sewage.

Sewage disposal facilities at Nelson, Southwick and Widley were to be built leeward of the prevailing winds! Water from surface drains and ablutions were to be disposed of in dead wells sunk into the lowest parts of the ditches of these three forts.

Napped flints were used in the forts in the walls and the debris from the napped flints was used as a base for the gravelling of the parades and on the terrepleins. In 1865 it was recommended that the military purchase the excess flints from the contractor so they could be used for future work and repairs as well as metalling of roads. At that time they purchased 2,900 sq. yds., at 3/- a

Navvies at work.  
A section from  
"The Town and  
Harbour of  
Portsmouth from  
Portsdown Hill"



square yard from the contractor, which totalled £435.

Listed in the Commanding Royal Engineer's letter books, both in 1862 and later in 1866, are various buildings and plant at Fort Purbrook. It can be assumed that these buildings would have been present, adjacent to all the forts being constructed at that time.

In 1862 there were stables for 40 horses and a hospital for sick horses!! By 1866 there were only stables for 22 horses as much of the construction work had been completed. Both lists include a variety of buildings showing what trades and work was going on supporting the building works. There were:- accommodation huts, chalk huts, brick huts, coal stores. Cement and mortar sheds. Carpenters and Smiths workshops, powder store, time keepers' office, also other offices, surgery and hospital.

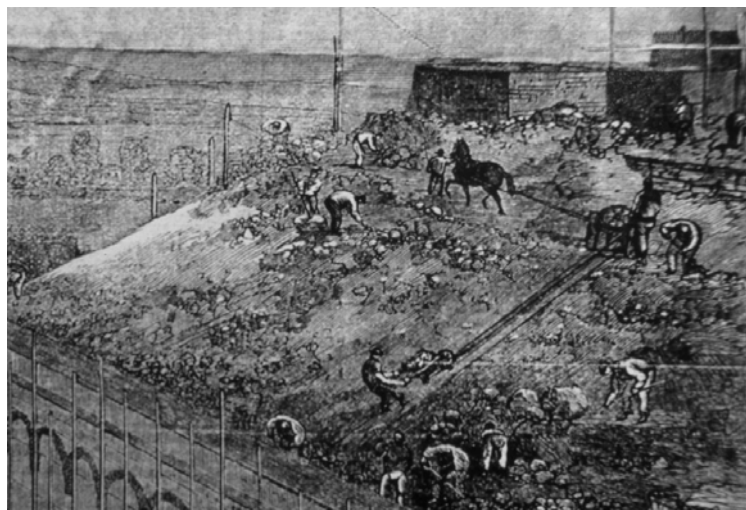
Accommodation listed was double huts 46ft by 28ft containing 2 living rooms, 2 sleeping rooms, and 2 hut keeper's rooms. Attached to each were wash houses, 10ft by 6ft boarded and felt roofed also 2 boilers and 2 water closets.

In the 1866 Fort Purbrook list, it includes some of the equipment: - Brick kilns and pumps to pump water to the brickfields.

Lime grinding mill, various types of steam engines for pumping water, mixing mortar, and driving other machines.

Also in the 1866 Fort Purbrook list:-

- Dobbin carts, road carts, and water carts.
- 252 wheelbarrows, brickmakers moulds.
- 330 excavators, Miners picks and axes.
- 18 sets of wheels and frames for horse roads.
- 2,830yds of Tram Road with crossings and sidings and 79 railway wagons.



- 14,750 ft., of various scaffolding poles
- 5,255 scaffolding boards
- 3 iron drums with steel wire ropes and pulleys for working on inclines.

Similar tools and machine were in use at all the forts and we can see from the engraving of Fort Nelson in 1873 some of the activities and tools being used at the fort.

#### WHEEL-BARROW RUNS

After dumping the contents of the wheelbarrow, the man had to run back down the rampart in front of the empty barrow! Many were injured doing this job.

In 1864, 370 men of the First Royals, camped on Portsdown Hill. They were under the direction of the Royal Engineers to clear hedges etc., and level the ground to give clear arc of fire for the forts guns.

They were encamped in about 80 tents and enjoyed their novel employment. They could be seen in the evenings in local villages like gay lothario's *"making the hearts of the rustic ladies, flutter with unusual vivacity"*.

By May 1864 Widley, Southwick, Purbrook and Nelson were well advanced in construction. Most of the first contract was approaching completion:- Ditches of 40ft depth around the four sites had been dug.

The east ditch at Fort Nelson showing the wheelbarrow runs. A section from "The Town and Harbour of Portsmouth from Portsdown Hill"





R.E. Officer, supervising. A section from "The Town and Harbour of Portsmouth from Portsdown Hill"

Walls and parapets finished.  
Embrasures ready for guns.  
Also the second contract had been started for building :-  
The Gorge, the Keep or Redan and the Barracks at these forts.

### ACCIDENTS

Over the years, it is not surprising that while the forts were being constructed, there were many accidents. The early ones involved men while felling trees, then men falling off scaffolding, down ditches, and some run over by carts and wagons.

The men were encouraged to pay in, voluntary, to a fund which the contractor administered to pay for a doctor. He attended accidents and dealt with them on site, if they had to go to hospital this was not seen as the responsibility of the contractor. This led to a lot of local complaints, that it put undue pressure on the local hospital, with all this work going on.

Several men were killed or injured during the building of the forts including:-

George Stevenson, a navvy and four of his friends, went drinking in the Black Dog in Havant. He left early to go home and as he passed along the hill in the dark he fell 30ft into a cutting. Sometime later his four friends were going home, one assumes drunk, on the same route and one fell into the same cutting when his friends got to him they found he was alright but next

to him was the body of George Stevenson! (April 1862)

At Fort Nelson William Carter, driver of a chalk cart, was killed. He had just discharged the contents of his cart and was going back along the tramway when the horses took fright, he tried to stop them but slipped and the wheel of the cart passed over his head causing him instant death. His fellow workmen collected money and paid for his funeral at St Mary's Church Portchester. The funeral procession went from the foot of the hill down Castle Street to the church. Twelve fellow drivers carried the coffin preceded by the Leading-hand from the Works. His mother and the wives of the other drivers followed the coffin, behind them 80 mechanics and labourers.

After the funeral they all processed back up Portsdown Hill to the Fort. (Oct. 1863)

A Railway truck full of men coming from Fort Southwick was on its way towards Fareham junction, being on an incline it needed no steam engine. It started on its journey but the rails were slippery and the brake would not work, even using sand through a drill onto the rail it would not stop. The truck shot off towards Fareham junction, but owing to the points at Fort Nelson being set to go into the siding, it careered at 30/40mph into the siding, where it collided with a van. 12/13 men were injured and 5 men were severely injured. (Oct. 1863)

### INCIDENTS

With number of workmen around it was not surprising that the crime rate increased and several examples appear in the local papers. e.g. Thomas Baker stole cheese from the canteen of Thomas Pellit at Crookhorn and was sent to Winchester for trial! (Dec. 1861)

William Barfoot, a labourer who was employed to remove condemned rails and convey them to Cosham Station.